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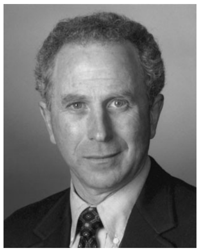

Farm machinery costs continue to rise

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Ever since humankind went from hunting and gathering to cultivating plants for a stable food supply, people have been looking for ways to make the job easier. Pointed sticks and hoes gave way to implements pulled by oxen and mules. Animal power gave way to steam, gasoline and diesel powered equipment. Successive generations of farm machinery have offered increased capacity, comfort and reliability. Today's behemoth tractors, planters and harvesters are part of an $8 billion a year industry.

Modern farm machinery allows operators to produce and harvest more bushels in less time. Breakdowns are fewer and human fatigue is less. But all these features come at a price.

Trends

The data in Figure 1 show how machinery costs on Iowa farms have risen in the past 15 years. Fuel and repair costs have been fairly stable, except for a spike in 1997. Data for 2005 are not available yet, but higher energy costs will probably add at least $10 per acre to total costs.

The biggest change since 1991 has been in depreciation and interest costs, which have increased more than 50 percent. Interest expense includes a charge on equity investment in machinery as well as interest paid on machinery loans. Depreciation is calculated as ten percent of equipment inventory value, which is more realistic than using income tax schedule values. The data do not include equipment used primarily for livestock enterprises.

Although it is difficult to pinpoint the exact reasons for the increases, much of it has to do with the amount of capital tied up in farm equipment. Figure 2 shows the average investment in machinery per crop acre since 1991 for the same set of farms as in Figure 1. Rapid increases occurred in the early 1990s

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Handbook updates

For those of you subscribing to the handbook, the following updates are included.

Livestock Planning Prices
– B1-10 (1 page)

Change in Hog Prices by Two Week Period, 1995-2004
– B2-15
(1 page)

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and again in the early 2000s, as farmers replaced equipment inventory. Sales of large farm tractors and combines in the United States in 2004 were up over 20 percent from the average from the previous 5 years, and sales in 2005 have been only slightly lower. Higher machinery prices reflect advances in technology as well as higher costs for steel and other components.

Machinery Costs and Farm Size

A common justification for increasing farm size is to spread machinery costs over more acres, thus reducing the cost per acre. Table 1 summarizes machinery costs on almost 2,000 Illinois crop farms in 2002. Farms were separated into groups, by number of tillable crop acres. Interest cost on machinery investment could not be identified separately, so it is not included in the tabulation.

Total machinery cost per acre declined rapidly from the under 400 acre group to the 400 to 800 acre group, from $81 per acre to only $68. However, costs declined only another $5 per acre for the next larger group, farms with 800 to 1,200 tillable acres. From that point costs remained nearly constant as farm size increased. Apparently, after about 1,000 tillable acres the purchase cost per unit of capacity remains relatively constant. At some point operators simply begin duplicating entire machinery sets rather than purchasing larger units. Smaller farms had the largest disadvantage in the repair costs category. They may be more likely to purchase used machinery or keep units longer, resulting in higher repair and maintenance costs.

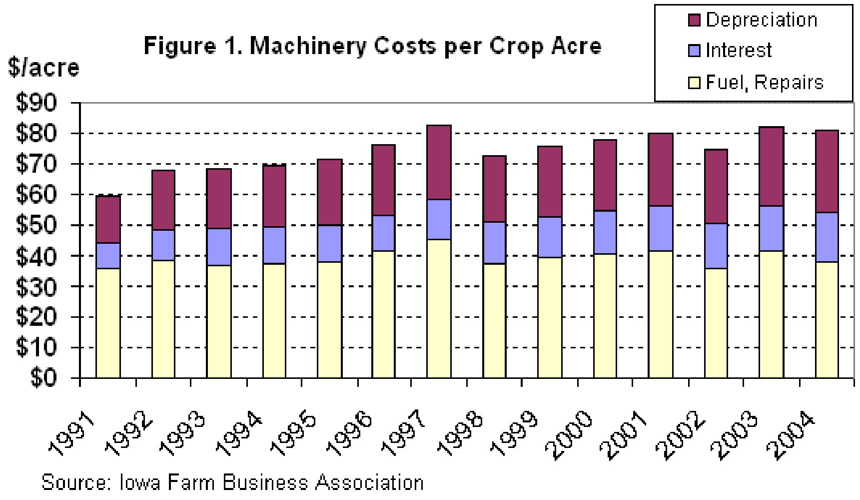

Figure 1. Machinery Costs per Crop Acre

Source: Iowa Farm Business Association

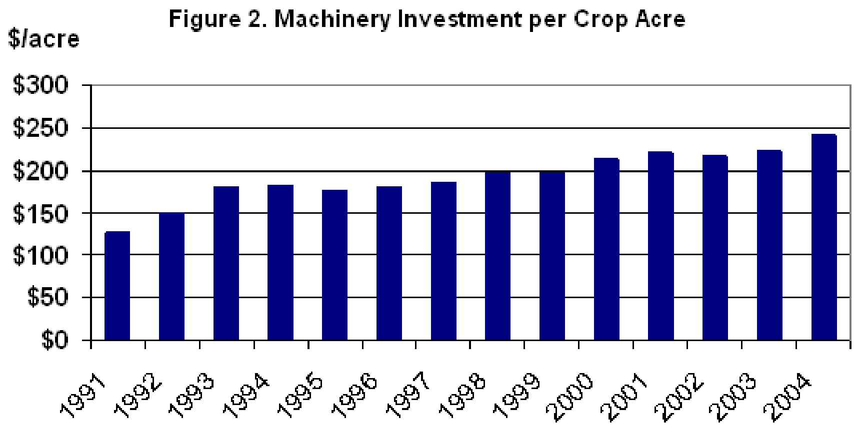

Figure 2. Machinery Investment per Crop Acre

Source: Iowa Farm Business Association

Controlling Machinery Costs

Keeping farm machinery costs in line is not easy. Fuel prices are very volatile some years. Major repairs may have to be performed without warning. New technology pushes up the list prices on new equipment. Nevertheless, good managers have learned to use some of the following strategies to try to keep their costs under control.

1. Use existing machinery to full capacity.

2. Utilize custom hire or rental plans for low-use equipment.

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3. Invest in used machinery when units in good condition are available.

4. Choose the lowest cost financing plan when purchasing machinery.

5. Own machinery jointly with other operators.

6. Keep equipment well maintained, do your own work when possible.

7. Perform custom work for other farmers or landowners.

These strategies are discussed in detail in an Iowa State University home study course called "Farm Machinery Economics." Each part of the course contains a discussion of the major points, examples and exercises, review questions, references for further study, and electronic spreadsheet files to help you analyze your own situation. The course is available over the Internet at www.extension.iastate.edu/ames/.

Electronic spreadsheets for calculating machinery costs, comparing financing alternatives, and analyzing other farm machinery decisions are also available on the Ag Decision Maker website, under Decision Tools (www.extension.iastate.edu/agdm/).

Table 1. Machinery Costs by Farm Size, $ per Acre

	Number of Tillable Acres				
Type of Cost	**Under 400**	**400 to 800**	**800 to 1,200**	**1,200 to 2,000**	**Over 2,000**
Depreciation	$36	$33	$32	$32	$33
Repairs	13	9	7	7	7
Fuel and oil	22	17	15	15	14
Machine hire	10	9	9	9	9
Total	**$81**	**$68**	**$63**	**$63**	**$63**

Source: University of Illinois